

AMIGA ALIGN
OPERATION AND TEST PROCEDURES

OCTOBER, 1989

PN-314967-03

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AMIGA ALIGN INTRODUCTION

The Drive Mechanisms installed in the Amiga 1000 Computer and 1010 External Disk Drives are manufactured by three (3) different vendors. However the Amiga 500 and Amiga 2000 use two (2) other vendors. The Amiga Align Test has been verified on all drives.

When the Amiga Align Kit, (P/N 314965-02), is received it should contain one (1) each of the following...

- * P/N 314966-01 -- Amiga Align Program Disk (Version 1.0)
- * P/N 314966-03 -- Amiga Align Program Disk (Version 2.0)
- * P/N 314968-02 -- Amiga Digi-Log Calibration Disk
- * P/N 314967-03 -- Operations/Test Procedure Manual

If any item is missing, contact the Commodore Parts Department promptly.

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**
**          IMPORTANT NOTE -- IMPORTANT NOTE -- IMPORTANT NOTE          **
**
**  FOR PROPER OPERATION OF THE AMIGA ALIGN, THE FOLLOWING              **
**  STEPS ARE NECESSARY                                                 **
**
**  1. THE PROGRAM DISK MUST BE UN-WRITE PROTECTED (TAB CLOSED)        **
**
**  2. THE DIGI-LOG CALIBRATION DISK MUST BE WRITE PROTECTED           **
**     (TAB OPEN)                                                        **
**
**  3. A 256K RAM EXPANDER MUST BE INSTALLED (A1000 ONLY)              **
**
*****
**
**          PLEASE NOTE -- PLEASE NOTE -- PLEASE NOTE -- PLEASE NOTE    **
**
**  THE AMIGA ALIGN PROGRAM DISK IS NOT COPY PROTECTED AND BACKUP      **
**  COPIES SHOULD BE MADE BEFORE USING THE ORIGINAL                    **
**
**  THE DIGI-LOG CALIBRATION DISKETTE IS A SPECIAL COMMODORE           **
**  DISKETTE AND CANNOT BE COPIED                                       **
**
*****
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AMIGA ALIGN OPERATION AND TEST PROCEDURES

SECTION ONE -- AMIGA ALIGN CHECK SETUP

1. Approximately 20 seconds after power is applied to the system, the KICKSTART PROMPT (A1000), or WORKBENCH PROMPT (A500/A2000) should be displayed.
2. At KICKSTART, insert the Amiga Align Program Diskette into the internal drive. (A1000 only)
3. At WORKBENCH, insert the Amiga Align Program Diskette into the internal drive.
4. Approximately 40 seconds later the Title Screen is displayed.
5. Approximately 20 seconds later the Amiga Align Start Screen is displayed.

SECTION TWO -- AMIGA CHECK PROCEDURES

1. When any key is pressed at the Start Screen the Drive Number Option Screen is displayed.

NOTE: INTERNAL DRIVE - always select '0' (A1000/A500 only)
EXTERNAL DRIVE - always select '1' (A1000/A500 only)
INTERNAL DRIVE - select '0' or '1' (A2000 only)
EXTERNAL DRIVE - select '2' (A2000 only)

2. After the Drive Number has been selected, insert the Amiga Digi-Log diskette into the selected drive.
 - A. Press 'RETURN' to start Amiga Align Check.
** When the Amiga Align Check is complete the Alignment Status of the drive under test is displayed as
* (UNIT PASSED OR UNIT FAILED).
 - (1) UNIT FAILED - Error During Test
Press 'Y' to enter test mode
 - (2) UNIT PASSED - Alignment is OK
Press 'Y' to enter test mode

SECTION THREE -- AMIGA ALIGN TEST MODE OPTIONS

(A) Alignment (W) Write Test (S) Speed Test
(R) Re-Check (C) Change (Q) Quit

AMIGA ALIGN OPERATION AND TEST PROCEDURES

RECOMMENDED TEST SEQUENCE

- (1) Unit Failed
 1. PRESS (S) CHECK SPEED
 - ** SPEED 'OK' - Press (Q) Quit
Power Off System
Refer to Section Five
 - ** SPEED 'OFF' - Adjust Speed -- Refer to Section Four
Press (R) Re-Check
- (2) UNIT PASSED
 1. PRESS (S) CHECK SPEED
 - ** Speed 'OK' - drive is GOOD

SECTION THREE -- AMIGA ALIGN TEST MODE OPTIONS

TEST MODE OPTIONS

1. Press (A) Alignment Test - This option is used to align the drive if a failure occurs during the Alignment Check.
-- Refer to Section Five
2. Press (W) Write Test - This option checks the format and Read/Write ability of the drive under test. Alignment and Speed should be verified before selecting this option.
 - A. Remove Amiga Digi-Log Diskette and insert Blank Test Diskette.
NOTE: Blank Diskette MUST BE UN-WRITE-PROTECTED (Tab Closed)
 - B. Press 'RETURN' to begin test.
 - ** The Write Test formats all 80 Cylinders of the diskette, then writes, reads and verifies selected test data.
 - ** If an error is encountered during the test, a FAILED message is displayed.
 - ** If the drive passes the test.
Press any key to return to the Test Mode Options.
3. Press (S) Speed Test - This option is used to check the Rotational Speed of the Drive Motor.
NOTE: Amiga Digi-Log Diskette must be inserted
 - ** If the Reading = 295-305 -- SPEED IS OK
 - ** If Adjustment is necessary -- Refer to Section Four
4. Press (R) Recheck - This option is used to retest the drive after all necessary adjustments are complete.
5. Press (C) Change Drive - This option is used to change the drive number to allow testing of the other system drive.
e.g.; If the Internal Drive was tested, selecting '1' will execute the test on the External Drive (A1000 or A500 only).
6. Press (Q) Quit - This option is used to terminate the Amiga Align Program.

AMIGA ALIGN OPERATION AND TEST PROCEDURES

NOTE: The system must be Re-Booted if this option is selected.
SECTION FOUR -- DRIVE MOTOR SPEED ADJUSTMENT

If the reading from the Speed Test is not within the allowed limits of 295-305, the motor speed must be adjusted. Although the procedure for this adjustment is the same for all drives, the location of the Motor Speed Control Pot will vary. The Internal Drive Mechanism can be identified once the Amiga Top Shield and RF Shield have been removed. The External Drive Mechanism can be identified once the top has been removed from the External Drive.

The Motor Speed is adjusted by turning the Motor Speed Control Pot until the displayed speed reading is equal to (300). The location of the Motor Speed Control Pots are listed below.

DRIVE VENDOR IDENTIFICATION

1. NEWTRONICS DRIVE ASSEMBLY

(MODEL# D357) - Top right hand side of the Drive Mechanism behind the MITSUMI plastic plate. Accessed from the top of the Drive Assembly.
** SEE PAGE 8

2. PANASONIC DRIVE ASSEMBLY

(MODEL# JU-363-03) - Designated as (VR1) on the Drive PCB.
MATSUSHITA Accessed from the bottom of the Drive
** SEE PAGE 9

3. NEC DRIVE ASSEMBLY

(MODEL# FD1035) - Designated as (VR1) on the Drive PCB.
NEC Accessed from the bottom of the Drive Assembly.

4. CHINON DRIVE ASSEMBLY

(MODEL# F-354E) - Designated as (VR1) on the Drive PCB.
CHINON Accessed from the bottom of the Drive Assembly.

5. EPSON DRIVE ASSEMBLY

(MODEL# SMP-400) - Designated as (VR1) on the Drive PCB.
EPSON Accessed from the top of the Drive
** SEE PAGE 9

AMIGA ALIGN OPERATION AND TEST PROCEDURES

SECTION FIVE -- DRIVE ALIGNMENT

If the Amiga Align Check fails during testing, it will be necessary to align the drive. Although the procedure for the drive alignment is the same for all drives, the location of the test points will vary. The Internal Drive Mechanism can be identified once the Amiga Top Shield and RF Shields have been removed. The External Drive Mechanism can be identified once the top cover has been removed.

The alignment test points are as follows.

DRIVE VENDOR IDENTIFICATION

1. NEWTRONICS DRIVE ASSEMBLY

(MODEL# D357) - Designated as (P & N) on the Drive PCB.
MITSUMI Accessed from the bottom of the Drive
** SEE PAGE 8

2. PANASONIC DRIVE ASSEMBLY

(MODEL# JU-363-03) - Designated as (TP1 & TP2) on the Drive
MATSUSHITA PCB. Accessed from the bottom of the
Drive Assembly.
** SEE PAGE 9

3. NEC DRIVE ASSEMBLY

(MODEL# FD1035) - Designated as (TP) on the Drive PCB.
NEC Accessed from the bottom of the Drive
** SEE PAGE 8

4. CHINON DRIVE ASSEMBLY

(MODEL# F-354E) - Designated as (TP) on the Drive PCB.
CHINON Accessed from the bottom of the Drive
** SEE PAGE 10

5. EPSON DRIVE ASSEMBLY

(MODEL# SMP-400) - Designated as (TP1 & TP2) on the Drive PCB.
EPSON Accessed from the bottom of the Drive
** SEE PAGE 9

AMIGA ALIGN OPERATION AND TEST PROCEDURES

SETTING UP TO DO AN ALIGNMENT

1. Make sure the power is OFF.
2. Remove the cover and necessary shielding.
3. Remove the drive to be aligned from the system.
4. Remove the assembly from the mounting bracket (A1000).
5. Connect the Scope Probes as follows ...

SECTION FIVE - DRIVE ALIGNMENT (continued)

NEWTRONICS - Locate the three (3) pin connectors located on the Drive PCB. The pins designated as, (N,P,G), are accessed from the bottom of the drive mechanism. Connect the Scope Probes to these PINS

NOTE: See PCB Layout -- Page 8.

PANASONIC - Locate the double row of test points located on the Drive PCB. The points designated as, (T1 and T2), are accessed from the bottom of the drive mechanism. Connect the Scope Probes to these points.

NOTE: See PCB Layout -- Page 9

NOTE: It will be necessary to solder pins to these points to insure proper connection of the scope probes.

NEC - Locate the three (3) pin connector located on the Drive PCB. The connector, designated as, (TP1) is accessed from the top of the drive mechanism. Two (2) pins of this connector are designated as, (1 and 3), with the center pin unmarked. Connect the Scope Probes to the center pin and pin 3.

NOTE: See PCB Layout -- Page 8.

CHINON - Locate the three (3) pin connector located on the Drive PCB. The connector, designated as, (TP1), is accessed from the bottom of the Drive Mechanism. Connect the Scope Probes to the two (2) outside pins.

NOTE: See PCB Layout -- Page 10.

EPSON - Locate four (4) test points on Drive PCB, marked (T,G,1,2). The points designated as, (1 and 2), are accessed from the bottom of the drive mechanism. Connect the Scope Probes to these points.

NOTE: See PCB Layout -- Page 9

NOTE: It will be necessary to solder pins to these points to insure proper connection of the scope probes.

AMIGA ALIGN OPERATION AND TEST PROCEDURES

6. Set both channels to the AC scale.
7. Set both channels to 50mv per division.
8. Set sweep to 20ms per division.
9. Differently ADD both channels.
10. Set trigger to the Auto Mode.
11. Adjust the sweep for center of the display.
12. Make sure the drive cables are properly connected.
13. Turn the system power on.
14. Load Amiga Align - Refer to section one.

SECTION FIVE -- DRIVE ALIGNMENT (Continued)

When (A) Alignment is selected from the Test Mode Options, the Read/Write Heads will step to Track 40 (Alignment Track). A SINGLE DIAMOND should be displayed on the scope at this time.

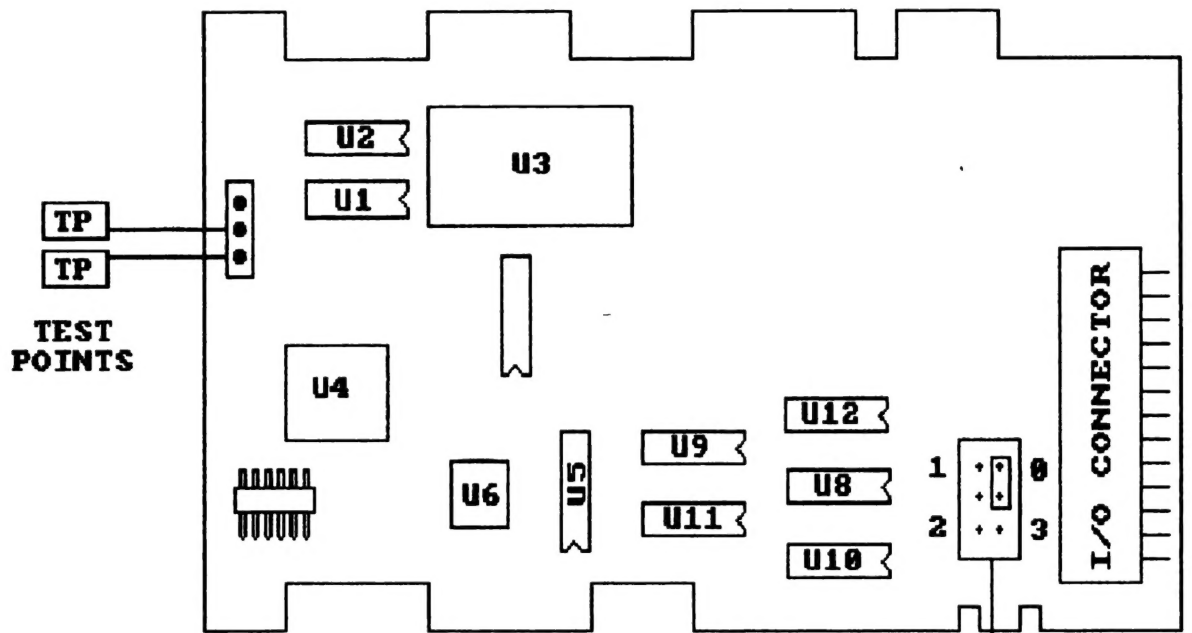
NOTE: See page 11 for diagram of DIAMOND.

If the ACTUAL PEAK AMPLITUDE of the DIAMOND is not higher than 200mv p-p, Drive Alignment is necessary.

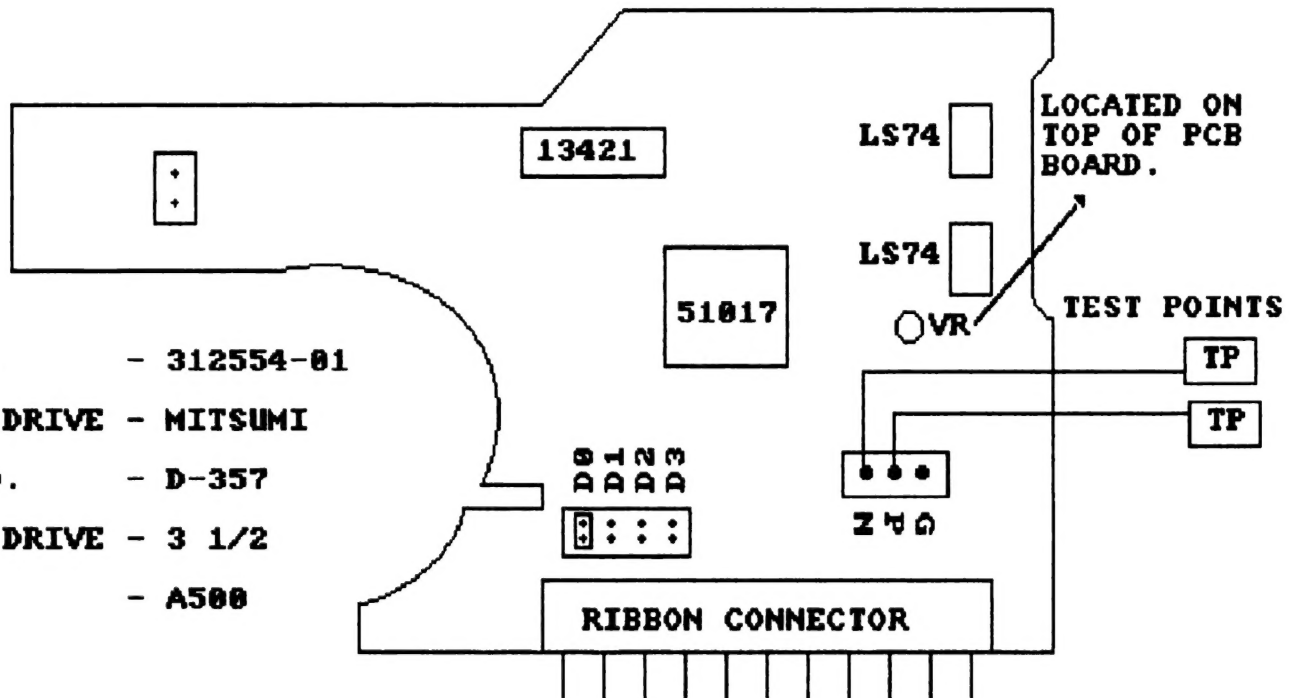
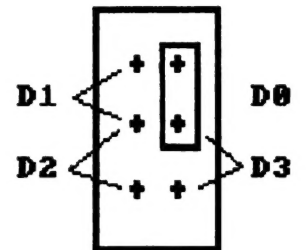
- A. Loosen the Stepper Mounting Screws and turn the Stepper Motor until the MAXIMUM PEAK AMPLITUDE is reached. This is the point where the drive is in proper alignment.
- B. Tighten the Stepper Motor Screws. The DIAMOND must keep a Peak Amplitude of 200mv Minimum after the Stepper Motor is tightened.
- C. Pressing the '+' and '-' keys during the Alignment Test will skew the heads, (IN or OUT), checking Hysterias. After Hysterias, the DIAMOND must keep a Peak Amplitude of 200mv Minimum.

ALIGNMENT NOTES:

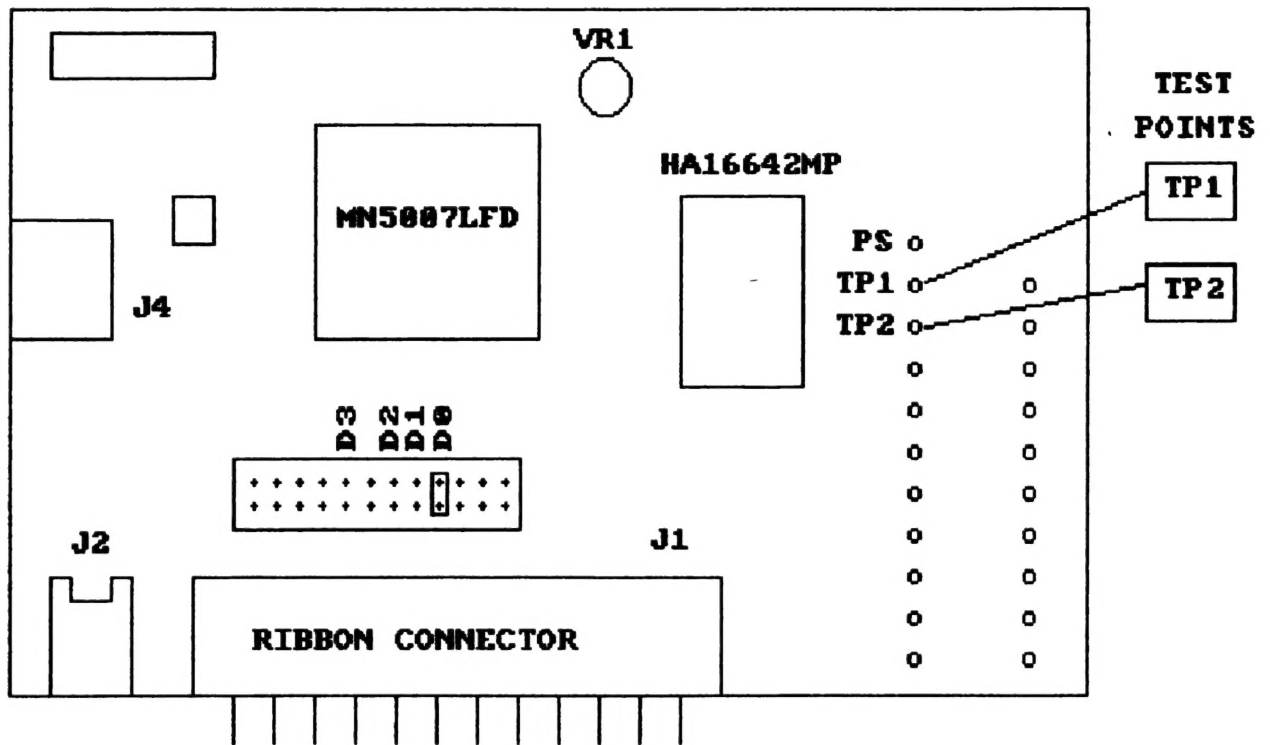
1. If the Peak Amplitude does not reach the 200mv Minimum after the heads are stepped to Track 40 or cannot be adjusted to this level, Defective Read/Write heads are indicated and Drive Assembly replacement is required.
2. If the DIAMOND displays excessive noise, Noisy Read/Write Heads are indicated. A drive which displays this type of symptom may operate and not display any read or write errors unless heavily protected software is used. In this case Drive Assembly replacement is required.



PART NO. - 327156-01
 MAKE OF DRIVE - NEC
 MODEL NO. - FD-1035
 SIZE OF DRIVE - 3 1/2
 USED ON - A1000

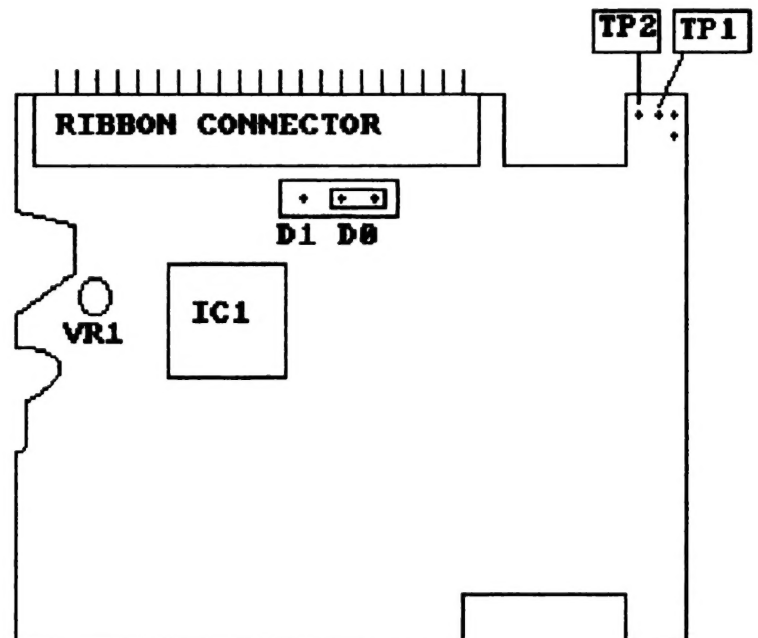


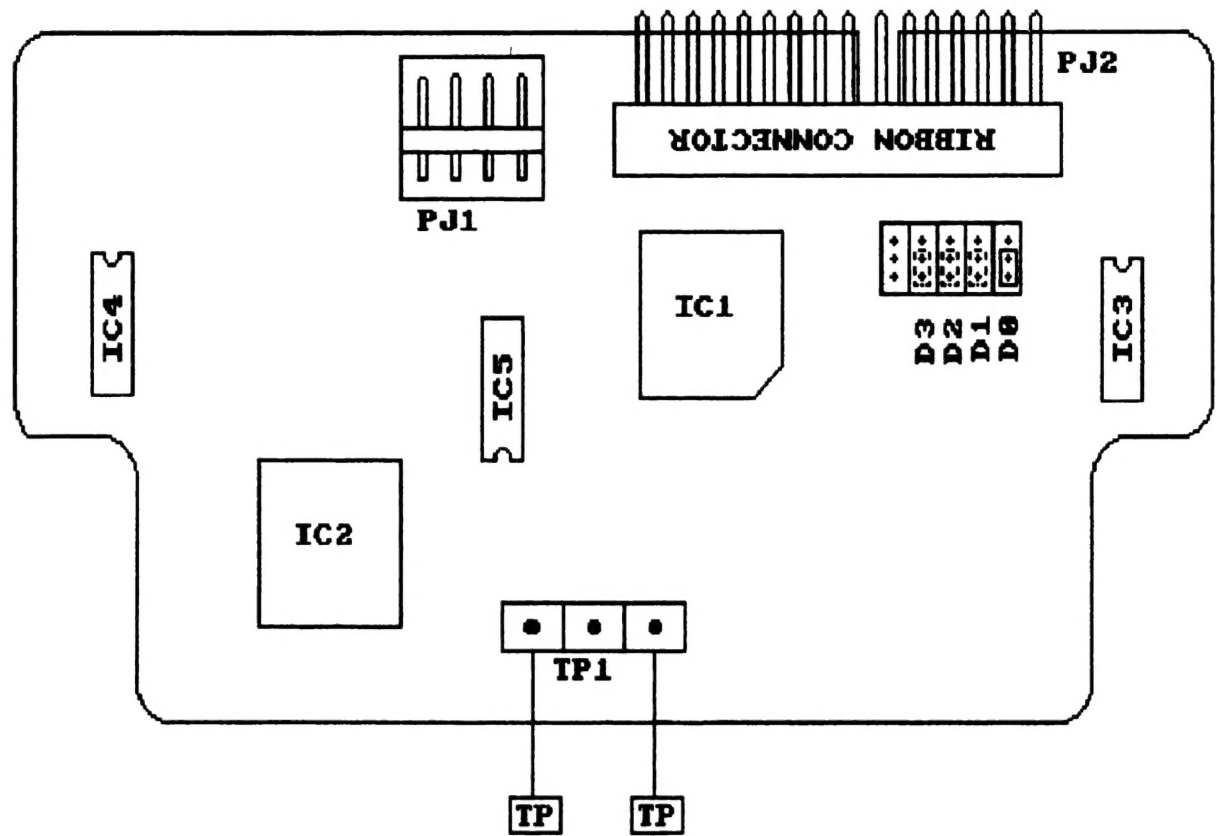
PART NO. - 312554-01
 MAKE OF DRIVE - MITSUMI
 MODEL NO. - D-357
 SIZE OF DRIVE - 3 1/2
 USED ON - A500



PART NO. - 327156-02
MAKE OF DRIVE - MATSUSHITA
MODEL NO. - JU-363-03
SIZE OF DRIVE - 3 1/2
USED ON - A1000

PART NO. - 312554-03
MAKE OF DRIVE - EPSON
MODEL NO. - SMD-400
SIZE OF DRIVE - 3 1/2
USED ON - A500





TEST POINTS

PART NO. - 312554-01
MAKE OF DRIVE - CHINON
MODEL NO. - F-354E
SIZE OF DRIVE - 3 1/2
USED ON - A500 / 1581

VOLTS / DIV = 50mV

TIME / DIV = 20mS

TOTAL WAVE SIGN = APPROXIMATELY 220mV

